

Amendments to the Drawings:

The drawing sheet attached in Appendix A containing Figures 11A and 11B is being presented as a new formal drawing sheet to be substituted for the previously submitted drawing sheet. Figs. 11A and 11B have been amended.

Figs. 11A and 11B are changed to include the phrase “(Prior Art).”

REMARKS

The Office Action mailed on March 18, 2005, has been reviewed and the comments of the Patent and Trademark Office have been considered. Prior to this paper, claims 1-10 were pending. By this paper, Applicants do not cancel any claims, and add claims 11-14. Therefore, claims 1-14 are now pending. Support for new claims 11-14 may be found, among other places, at page 11 of the specification, and the figures.

Applicants respectfully submit that the present application is in condition for allowance for the reasons that follow.

Objections to the Drawings

Applicants submit herewith, in Appendix A, revised Figs. 11A and 11B. The revised Figs now state “(Prior Art)”, as requested in the Office Action. Applicants respectfully request that the objection to the drawings be removed in light of this amendment.

Specification Objections

In the Office Action, the specification was objected to for using the term “Ravigneawx.” Applicants traverse this rejection, noting that this term is commonly used in the field of planetary gear units. For example, U.S. Patents 6,905,434; 6,890,280; 6,878,087; 6,838,790; 6,819,985; 4,538,482 and 4,506,563 recite the word “Ravigneawx” in their specifications.

Applicants thus respectfully request reconsideration of this objection in view of the above.

Rejections Under 35 U.S.C. §112, Second Paragraph

In the Office Action, claims 1-10 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. As seen above, claims 1 and 10 have been amended.

With respect to the recitation “the ring plate being of an endless annular member,” it is respectfully submitted that the term “endless” is commonly used to describe components such as element 202A as presented in Fig. 7. Moreover, over 250 patents utilize the phrase “endless annular.”

In sum, Applicants respectfully request reconsideration in view of the above.

Claim Rejections Under 35 U.S.C. §103(a)

In the Office Action, Claims 1-2 and 5-8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nakano (U.S. Patent No. 6,114,784) in view of Muramatsu (JP 11-346446). Claims 1 and 3 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nakano in view of Herron (U.S. Patent No. 3,671,787). Claims 1, 4 and 8-9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nakano in view of Itoh (U.S. Patent No. 6,225,725). Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Nakano in view of Muramatsu and Kurosawa (U.S. Patent No. 6,043,583).

Applicants respectfully submit that the above claims are allowable for at least the following reasons.

Applicants rely on MPEP § 2143, which states that:

[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that each asserted combination is deficient with respect to at least one of these criteria, and thus a *prima facie* case of obviousness cannot be established in view of any combination.

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Claim 1 recites a stator for use in a two rotor single stator type electric motor, including at least one connecting ring plate coaxially installed in the stator core in such a manner that the ring plate is put between adjacent two flat magnetic steel plates of each stator tooth while contacting both of the flat magnetic steel plates, the ring plate being of an endless annular member.

In an exemplary embodiment, as shown in Figs. 4-8, the stator 101 comprises a stator core including a plurality of stator teeth (SP) that are independent from one another and circumferentially arranged around a common axis (O). Each stator tooth (SP) includes a plurality of flat magnetic steel plates that are aligned along the common axis (O) while contacting to one another. In congruence with the above excerpt from claim 1, the stator 101 further comprises at least one connecting ring plate (202A, 202B) (*see, e.g.*, Figs. 4, 6A, 7 and 8) coaxially installed in the stator core in such a manner that the ring plate (202A, 202B) is put between adjacent two of the flat magnetic steel plates of each stator tooth (SP) while contacting with both of the flat magnetic steel plates. Accordingly, in the invention of claim 1, the plurality of stator teeth (SP) that are independent from one another and circumferentially arranged around the common axis (O) are connected by at least one of connecting ring plate (202A, 202B).

The Cited References Do Not Suggest All Claim Recitations

Even if the first requirement of MPEP § 2143 was satisfied in the Office Action (which it is not, as explained below), the third requirement, that “the prior art reference (or references when combined) must teach or suggest all the claim limitations,” is still not met, at least in regard to (i) the combination of Nakano with Herron and (ii) the combination of Nakano with Itoh.

The Office Action correctly recognizes that Nakano fails to teach a stator having the features of the ring plate as claimed. In rejecting claims 1 and 3, the Office Action asserts that Herron remedies the deficiencies of Nakano. This is not the case. As noted above, claim 1 recites that the at least one connecting ring plate is coaxially installed in the stator core in such a manner that the ring plate *is put between adjacent two flat magnetic steel*

plates of each stator tooth while contacting both of the flat magnetic steel plates. Assuming *arguendo* that Herron's lamina 12 satisfies the recitation of a connecting ring plate, it still is not placed between adjacent two flat magnetic steel plates of each stator tooth of Herron. In fact, the magnets 18, 19, 20 and 21 of Herron are solid permanent magnets of non-laminate configuration. That is, they are not made of steel plates. (See, e.g., col. 2, lines 67-69, where the word "lamina" is used with respect to elements 12 and 11, but not elements 18-21.) Fig. 3 clearly shows that voids 36-39 of element 12 are present so that the permanent magnets may be placed in those voids. (See col. 3, lines 50-55 and Fig. 2 as compared to Fig. 3.) Thus, no plate of Herron may be placed *between* adjacent two flat magnetic steel plates, and, in fact, by teaching that the plate is placed around the magnets, Herron teaches away from such a feature.

As to claim 3, no plate of Herron teaches fingers as claimed, and the Office Action does not appear to assert the contrary. (Other than stating that the Nakano – Herron combination is used to reject claim 3, no other mention of claim 3 is present in the Office Action with respect to the prior art, and it is certainly by no means clear that Herron teaches the recitations of claim 3.)

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In rejecting claims 1, 4, 8 and 9, the Office Action asserts that Itoh remedies the deficiencies of Nakano. This is not the case. Claim 1 recites that the stator core includes at least one connecting ring plate coaxially installed in the stator core in such a manner that the ring plate is put between adjacent two of the flat magnetic steel plates of each stator tooth while contacting both of the flat magnetic steel plates, the ring plate being of an endless annular member. Itoh does not disclose such a ring plate.

The Office Action alleges that "iron core blanks 50" meets the requirement of a connecting ring as claimed. While there is indeed an endless ring 50 depicted in Itoh, this ring only exists as a blank, from which pole pieces 33 may be obtained to form pole piece laminates 34. That is, during manufacture of the device of Itoh, the ring 50 is broken up so that elements 33/34 may be formed. (Figs. 7 and 8(b) clearly show, with the inclusion of element 38 between elements 33/34, that ring 50 is broken up so that elements 33/34 are

separated from each other in a given laminate. Note how Fig. 7 identifies the outer ring assembly as reference 31, corresponding to Fig. 6, but does not identify any component as element 50.) Indeed, such is consistent with the title of Itoh: “*Manufacturing Process of A Divided Type Stator*.” Thus, Itoh fails to teach a stator having an endless ring as claimed in claim 1.

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In sum, even if the first requirement of MPEP § 2143 is satisfied, the third requirement of MPEP § 2143 is not satisfied in the Office Action, at least for the combination of Nakano - Herron and for the combination of Nakano – Itoh, since the cited references do not teach each and every element of the present invention.

Lack of Suggestion or Motivation to Modify or Combine the References

MPEP § 2143.01 states that “the prior art *must* suggest the desirability of the invention.” (MPEP § 2143.01, subsection 1, emphasis added.) Applicants traverse the rejections of claim 1 and 10 and the pertinent dependent claims on the grounds that the first requirement of MPEP § 2143 has not been met with respect to any of the asserted combinations.

Makano + Muramatsu: The Office Action alleges, for motivation to modify Nakano with the plate 81 of Muramatsu, that such a modification “would have eliminated leakage flux.” First, there is no evidence that the device of Nakano suffers from appreciable “leakage flux.” Second, there is no evidence that the ordinary artisan would have known or even considered the design of Nakano to suffer from “leakage flux.” Indeed, Nakano is the U.S. patent based on Japanese Laid-open Patent Application (Tokkai) 2000-14086 that is described in the first page of the specification as a related art. That is, Nakano shows the known stator (301) of Figs. 11A and 11B. Applicants labored to improve upon this design, and were motivated to add connecting rings to such a design to provide the stator teeth with a satisfied rigidity against the torque for suppression of deformation. (See specification, page 2, second

full paragraph.) Thus, there is no evidence that such a modification to Nakano would have obviously been desirable with respect to eliminating “leakage flux.”)

Third, while it is true that Muramatsu teaches that his plates do eliminate magnetic leakage, such is done in a design where the stator teeth 80 are not independent from one another (*see, e.g.*, Figs. 1 and 5, etc.). Thus, there is no evidence that the plates of Muramatsu could be successfully implemented to achieve the elimination of leakage flux, or would have been viewed as successfully eliminating leakage flux, in a stator having teeth that are independent from one another. In sum, the prior art does not provide sufficient motivation to modify Nakano utilizing the plate of Muramatsu, and thus the first requirement of MPEP § 2143 cannot be met with these two references.

Makano + Herron: Assuming *arguendo* that plate 12 of Herron would provide structural support, there is no teaching identified anywhere in the cited references that the device of Nakano requires additional structural support. Indeed, it is only the Applicants who have recognized this need. (As noted above, Nakano is the U.S. patent based on Japanese Laid-open Patent Application (Tokkai) 2000-14086 that is described in the first page of the specification as a related art.) Applicants respectfully submit that the PTO is utilizing impermissible hindsight for motivation to modify Makano with teachings from Herron. MPEP 2142, entitled “Legal Concept of *Prima Facie* Obviousness,” states that “impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.” Applicants provide a rationale for utilizing a ring in the device of Makano. It appears that the Office Action is utilizing the Applicants’ own disclosure against them for motivation to modify the prior art. While it is permissible under certain circumstances to use teachings in the “background section” of an application to teach missing *elements* of the prior art, it is impermissible to use Applicants’ application against them for motivation to combine or modify references.

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MPEP § 2143.01 details the requirements on the PTO for establishing motivation to modify or combine references to reject a claim as obvious. One requirement, as detailed in

MPEP § 2143.01, subsection 6, is that “the proposed modification cannot change the principle of operation of a reference – If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810 (CCPA 1959).” In *Ratti*, the CCPA held that the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in the primary reference.” This substantial redesign would have resulted in changing a rigid seal to a resilient seal. Thus, a reference cannot be modified to render an invention obvious if the modification changes a principle of operation of the reference.

With the above in mind, it is respectfully submitted that since the teachings of Herron rely on a bracing principle in that element 12 braces magnets 18-21 at their center, substituting element 12 into Nakano would change the principle of operation of Nakano, which relies on gripping its magnets at the top and bottom to hold the magnets in place. Since modifying Nakano to utilize a plate 12 changes the principle of operation of Nakano, just as changing the rigid seal to a resilient seal was found to change the principle of operation in *Ratti*, “the teachings of [Nakano] are **not sufficient** to render the claims *prima facie* obvious.” (MPEP § 2143.01, emphasis added.)

Makano + Itoh: The Office Action asserts that “it would have been obvious to modify Nakano and provide connecting ring plates per Itoh to improve manufacture.” First, as noted above with respect to the deficiencies of Itoh under the third requirement of MPEP § 2143, Itoh does not use a connecting ring in its stator. Instead, Itoh teaches the creation of a blank ring 50 from which elements are taken to make a stator. Thus, Itoh does not – cannot – teach the use of a connecting ring to improve manufacture. In fact, by teaching that the blank ring 50 is broken up, Itoh teaches away from the invention of the claims.

Further, the Office Action does not provide any rationale as to why the teachings of Itoh would have been seen as improving manufacturability of Nakano. Other than the general assertion about the advantages of combining Itoh with Nakano quoted above, nothing more is

said about this assertion. If the first requirement of MPEP § 2143 could be satisfied by merely asserting advantages in manufacturability, without any rationale, the first requirement would be completely eviscerated. In fact, it is quite likely that the ordinary artisan would have viewed the teachings of Itoh as complicating the manufacturing process of Nakano, as Itoh teaches braking up the components that make the teeth from the blank ring 50 and then bracing those components together with elements 38 and 31, which would have appeared to the ordinary artisan to have been much more complicated than the teachings of Nakano. Thus, Itoh would have taught away from the invention of the claims.

Makano + Muramatsu + Kurosawa: The combination of these three references would not have been obvious for at least the reason that there is no motivation to combine Makano and Muramatsu, as detailed above. Thus, assuming *arguendo* that it would have been obvious to combine Kurosawa with Makano, a *prima facie* case of obviousness still is not made.

New Claims

As seen above, Applicants have added new claims 11-14. Claim 11 is allowable, in addition to the pertinent reasons detailed above with respect to claim 1, because no cited reference teaches that “the at least one connecting ring plate is adapted to suppress deformation or inclination of the stator teeth, when a torque is applied to the stator, by contacting both of the flat magnetic steel plates.” For example, assuming *arguendo* that there was in fact motivation to include the plate of Muramatsu with Nakano, such a combination would still not result in a ring that is adapted to suppress deformation or inclination of the stator teeth, because Muramatsu teaches that his plates are simply used to eliminate leakage flux.

Claims 12-14 are allowable because no reference teaches a stator where at least some of the flat magnetic steel plates are held between the two connecting ring plates *only by compression forces* acting through the two connecting ring plates. For example, Muramatsu teaches that his plates are used with teeth that are **not** independent from one another, and,

therefore, his plates do not need to be of a design which can hold flat magnetic steel plates between plates only by compression acting through his rings.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

The Examiner Mullins is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Date

July 18, 2005

FOLEY & LARDNER LLP

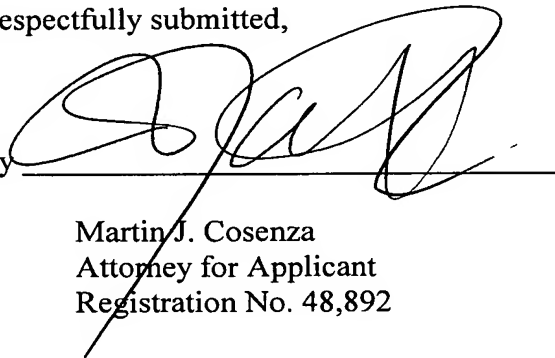
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Respectfully submitted,

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